Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 1 No. 4** **April 1998**

Our 4th month! Electrical code issues and answers.

● Public hearings for proposed changes to WAC 296-46 and 296-401 will be held:

April 23, 1998 1:30 PM
Spokane Public Works Building
Co. Commissioners Assembly Room (Lower Level)
1026 West Broadway, Spokane

April 24, 1998 1:30 PM
Department of Labor and Industries Building
Auditorium
7273 Linderson Way, Tumwater

The proposed amendments increase existing fees by 4.05%; establish new fees for new services rendered or for services previously performed without charge; increase certain existing civil penalties and establish a new one in order to strengthen the department's compliance efforts; add technical changes; and clarify existing rule sections. The tentative adoption date for these rules is May 29, 1998 and the tentative effective date is June 30, 1998.

Copies of the proposed rule changes are available upon request by calling (360) 902-5259; or by written request to the Department of Labor and Industries, Attention: Janet Lewis, Chief Electrical Inspector, P.O. Box 44460, Olympia, WA 98504-4460. Additional details and other electrical program information is available on our Internet home page at:

http://www.wa.gov/lni/electrical

● Listed plastic floor boxes

There are now listed floor boxes available constructed of plastic. These listed boxes and their listed nonmetallic covers are acceptable in any application where nonmetallic boxes and wiring methods are permitted. The use of these boxes is not prohibited by WAC 296-46-21052, which allows the use of unlisted formed or welded metal boxes, substantially supported, in out of traffic areas of dwelling units. This rule was adopted when there were few listed floor boxes available, most were intended for concrete slab applications, and all were quite expensive. The industry now has several inexpensive listed floor boxes available for many applications and WAC 296-46-21052 has outlived its usefulness. A proposal to remove this rule from the WAC and require compliance with NEC 370-27(b) or its exception is a part of the current rule package.

● Field evaluation of unlisted amusement rides

As a result of winter meetings with representatives of the carnival industry, the department agreed to allow unlisted rides of foreign manufacture to be field evaluated for electrical safety. Evaluations must be done by electrical testing laboratories accredited by the department to do field evaluations to the appropriate and applicable standards (ANSI/UL 508, etc.). Normally field evaluations are site-specific and must be redone when equipment is relocated. However, since the power supplies, feeders, and distribution equipment travel with the ride, the field evaluation labels will be acceptable when the ride is moved.

● Conduit entries into outdoor enclosures

The preferred method to enter the top of a NEMA 3R "Rainproof" enclosure is through a factory-installed hub or through factory-punched holes fitted with the proper accessory hub. Unused factory hubs or holes must be sealed with the manufacturer's proper weatherproof blank or plug. Any entries into the top of an outdoor enclosure that are punched or drilled in the field must utilize listed hubs or listed sealing locknuts that are suitable for the wet environment. These requirements apply to entries into the sides or back of NEMA 3R enclosures whenever the holes are adjacent to or above live parts. No special sealing is required below live parts or on the bottom of the enclosure.

Proper workmanship is essential in this field work. Electrical inspectors will not approve such fittings or connections that have oversized, warped, or eccentric holes, damage to the corrosion protection of the enclosure, or any other conditions of installation that would adversely effect the weatherproof integrity or durability of the conduit entry.

● Grouping of disconnecting means in an electrical room (NEC 230-72 and NEC 225-8)

The term "grouped" is not specifically defined in the NEC. There is no requirement for the maximum distance allowed between disconnects nor a requirement that disconnects be adjacent to one another. Past department practice to determine when disconnects are "grouped" has been dependent on the specifics of each installation.

The department recommends and prefers that service disconnects, in separate enclosures, be mounted adjacent to one another whenever practicable. However, the department has allowed separate disconnect enclosures to be mounted on adjacent or opposite walls in the same electrical room, when the disconnects are visible from one another or all are visible from a central location, and when each is clearly marked. The department does not require disconnects to be within a specific distance of each other, but it prefers that they be as near as practicable to each other.

The intention of grouping service (or building) disconnects is to allow personnel to shut down the premises wiring quickly and without confusion in case of an emergency. Enclosures that are adjacent and clearly identified are the best way to meet this intention. If you have special construction circumstances that you feel will not allow this type of installation, present your proposed alternative design to the electrical inspector or electrical inspection field supervisor before the equipment is installed.

● Guidelines for acceptable wiring methods in non-conventional building construction

Innovative construction systems are being used in all areas of the state. New systems include poured-in-place concrete walls formed and insulated by expanded polystyrene panels which remain on the interior and exterior surfaces of the walls; foam-core OSB or plywood sheathed interlocking building panels; and buildings where the primary wall construction materials are compressed straw.

Conduit wiring systems are suitable for these types of construction. However, raceway systems must be inspected prior to concealment. Our electrical installation laws require that certified (01) journeymen electricians, with trainees in a maximum one-to one ratio, must install residential conduit systems.

Nonmetallic-sheathed cable wiring methods can be used in these types of construction, but normal bored holes in framing members installation methods are not applicable. The following general installation guidelines will be applied to NM cable wiring in these unconventional structures:

All boxes must be rigidly supported from a structural member of the building by securing to concrete or using a metal, approved polymeric, or wood brace as described in NEC 370-23. Mechanical fasteners, such as bolts or studs, must minimize space taken up within a box. Inspectors will not approve glue or spray foam adhesive to secure boxes. The installer must insure that the location of boxes in walls or ceilings complies with NEC 370-20.

Nonmetallic-sheathed cables may be set in routed grooves or slots, or voids precast within the foam materials. NEC 300-4(e) states that *"Cable- or raceway-type wiring methods installed in a (shallow) groove, to be covered by wallboard, siding, paneling, carpeting, or similar finish, shall be protected by $^{1}/_{16}$ in. (1.59 mm) thick steel plate, sleeve, or equivalent or by not less that 1¼-in. (31.8 mm) free space for the full length of the groove in which the cable or raceway is installed."*

The department will allow daubs of spray foam adhesive placed in the groove to secure NM cables in place at intervals not to exceed 4½ ft and within 12 in. from every cabinet, box, or fitting. Cables must be left visible for inspection; additional foam can be added after cover is approved. Spray foam adhesive/insulation must be a type approved for use with type NM cable.

● City of Burien electrical inspections

Burien is the latest city to establish their own electrical inspection authority. The city has also elected to exercise its right under the Interlocal Cooperation Act to contract with another jurisdiction to perform inspections. Burien is contracting with the City of Sea-Tac for inspection services. As of April 3, 1998 we will no longer sell new permits for electrical inspections within the City of Burien. We will complete any projects on permits sold prior to this date.

● Trainee cards required to accumulate hours of experience

You cannot accumulate hours toward journeyman or specialty electrician experience unless you have a training certificate in your possession. Your training certificate must be renewed annually. An individual that has a valid specialty electrician certificate must also have a current training certificate in order to record hours of experience toward an additional specialty or toward journeyman certification.